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TI Biologically degradable synthetic conjugate fibers and nonwoven fabrics from them
IN Mochizuki, Masatsugu; Kan, Yoshihiro; Takahashi, Shuji; Inagaki, Koji
PA Unitika Ltd, Japan
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AB The nonwovens comprise conjugate fibers consisting of a core comprising biol. degradable thermoplastic polymers (e.g., aliph. polyesters or aliph. polyester-polyamides) with high melting temp. and a sheath component comprising biolog. degradable thermoplastic polymers having m.p. smaller than the m.p. of the core polymer and having no. of crimps .gtoreq.25/25 mm and are heat-bonded. Poly(ethylene succinate) with m.p. 102.degree. as the sheath and poly(butylene succinate) with m.p. 118.degree. as the core were together melt spun at 1:1 wt. ratio, lubricated, drawn, crimped in a stuffing box, cut, made into a carded web, and calendered at roll temp. 85.degree. in the relaxed state to give a nonwoven fabric with tensile strength in the machine and transverse directions 10.9 and 7.2 kg/5 cm, resp., and exhibiting excellent degrdn. on embedding the web in soil for 2 mo.
ST polyester conjugate fiber biolog degradable; nonwoven polyester conjugate fiber biolog degradable; polyethylene succinate conjugate fiber biolog degradable; polybutylene succinate conjugate fiber biolog degradable
IT Polyester fibers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(bicomponent; biol. degradable synthetic conjugate fibers and nonwoven fabrics from them)
IT Synthetic fibers, polymeric
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(bicomponent; biol. degradable synthetic fibers and nonwoven fabrics from them)
IT Biodegradable materials
(synthetic conjugate fibers and nonwoven fabrics from them)
IT Polyester fibers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyamide-, bicomponent; biol. degradable synthetic fibers and nonwoven fabrics from them)
IT Polyamide fibers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyester-, bicomponent; biol. degradable synthetic fibers and nonwoven fabrics from them)
IT 25569-53-3P, Poly(ethylene succinate) 25667-11-2P, Poly(ethylene succinate) 26247-20-1P, Poly(butylene succinate) 49721-13-3P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(bicomponent with poly(butylene succinate) fibers; biol. degradable synthetic conjugate fibers and nonwoven fabrics from them)

PATENT ABSTRACTS OF JAPAN

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(54) BIODEGRADABLE LATENT-CRIMPING CONJUGATE SHORT FIBER AND ITS NONWOVEN FABRIC

(57)Abstract:
PURPOSE: To provide biodegradable nonwoven fabric having excellent mechanical strength, dimensional stability, stretchability, bulkiness, flexibility and hot- bonding performance and suitable as a raw material for hygienic material and life-relating material.
CONSTITUTION: The objective fiber is a biodegradable latent-crimping eccentric core-sheath conjugate short fiber having a core part composed of a biodegradable thermoplastic polymer component having high melting point and a sheath part composed of a biodegradable thermoplastic polymer component having a melting point lower than that of the core part. As an alternative, the conjugate fiber is a biodegradable latent-crimping side-by-side conjugate short fiber produced by bonding a biodegradable thermoplastic polymer component having high melting point to a biodegradable thermoplastic polymer component having low melting point in side-by-side state. The nonwoven fabric is composed of conjugate short fibers having a crimp number of >25/25mm and partly heat- bonded or three-dimensionally interlocked with each other.

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* NOTICES *

CLAIMS

[Claim(s)]

[Claim 1] The biodegradability potential crimp nature compound staple fiber which is an eccentric sheath-core type compound staple fiber with which a core part consists of a biodegradability thermoplasticity polymer component of a high-melting point, and the sheath section consists of a biodegradability thermoplasticity polymer component of the low melting point from the aforementioned polymer, and is characterized by having potential crimp ability.

[Claim 2] The biodegradability potential crimp nature compound staple fiber which is a lamination type compound staple fiber with which it comes to join the biodegradability thermoplasticity polymer component of a high-melting point, and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] to a lamination type, and is characterized by having potential crimp ability.

[Claim 3] The nonwoven fabric characterized by for a core part consisting of a biodegradability thermoplasticity polymer component of a high-melting point, and for the sheath section consisting of a biodegradability thermoplasticity polymer component of the low melting point from the aforementioned polymer, and consisting of eccentric sheath-core type compound staple fibers which have 25 crimp numbers / crimp 25mm or more, and carrying out heat adhesion of the composition fiber partially.

[Claim 4] The nonwoven fabric characterized by consisting of lamination type compound staple fibers which it comes to join the biodegradability thermoplasticity polymer component of a high-melting point, and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] to a lamination type, and have 25 crimp numbers / crimp 25mm or more, and carrying out heat adhesion of the composition fiber partially.

[Claim 5] The nonwoven fabric to which a core part consists of a biodegradability thermoplasticity polymer component of a high-melting point, the sheath section consists of a biodegradability thermoplasticity polymer component of the low melting point from the aforementioned polymer, and consists of eccentric sheath-core type compound staple fibers which have 25 crimp numbers / crimp 25mm or more, and composition fiber is characterized by carrying out the confounding in three dimensions.

[Claim 6] The nonwoven fabric to which it consists of lamination type compound staple fibers which it comes to join the biodegradability thermoplasticity polymer component of a high-melting point, and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] to a lamination type, and have 25 crimp numbers / crimp 25mm or more, and composition fiber is characterized by carrying out the confounding in three dimensions.

[Claim 7] The biodegradability potential crimp nature compound staple fiber according to claim 1 or 2 with which a biodegradability thermoplasticity polymer is characterized by being an aliphatic polyester system polymer or an aliphatic polyester amide system copolymer.

[Claim 8] The nonwoven fabric according to claim 3, 4, 5, or 6 to which a biodegradability thermoplasticity polymer is characterized by being an aliphatic polyester system polymer or an aliphatic polyester amide system copolymer.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention has biodegradability, and a mechanical strength, dimensional stability, elasticity, and a loft are excellent, it is rich in flexibility, and relates to a suitable compound [to obtain the nonwoven fabric which moreover has a heat adhesive property] staple fiber, and its nonwoven fabric.
[0002]
[Description of the Prior Art] From the former, various biodegradability nonwoven fabrics, such as a nonwoven fabric which consists of a chemical fiber of natural products, such as a viscose-rayon staple-fiber nonwoven fabric obtained by dry process or solution dip coating, a cuprammonium rayon rayon continuous-glass-fiber nonwoven fabric obtained by the wet span bond method, a viscose-rayon continuous-glass-fiber nonwoven fabric, a chitin, and atelocollagen, and a span race nonwoven fabric which consists of a cotton, are known. However, since the mechanical strength of the constituent material of a nonwoven fabric itself was low and the biodegradability nonwoven fabric of these former had it, moreover contraction is large and dimensional stability was inferior at the time of dryness with the remarkable mechanical-strength fall at the time of water absorption and humidity, and a humid repeat, since the material itself was [which it is inferior in flexibility] non-thermoplasticity further, it had various problems, such as not having a heat adhesive property. [hydrophilic]
[0003]
[Problem(s) to be Solved by the Invention] this invention solves the aforementioned problem, and has biodegradability, and a mechanical strength, dimensional stability, elasticity, and a loft tend to be excellent, it tends to be rich in flexibility, and tends to offer a suitable compound [to obtain the nonwoven fabric which moreover has a heat adhesive property] staple fiber, and its nonwoven fabric.
[0004]
[Means for Solving the Problem] This invention persons reached this invention wholeheartedly as a result of examination that the aforementioned problem should be solved. That is, this invention makes a summary the biodegradability potential crimp nature compound staple fiber which is an eccentric sheath-core type compound staple fiber with which a core part consists of a biodegradability thermoplasticity polymer component of a high-melting point, and the sheath section consists of a biodegradability thermoplasticity polymer component of the low melting point from the aforementioned polymer, and is characterized by having potential crimp ability. Moreover, this invention makes a summary the biodegradability potential crimp nature compound staple fiber characterized by being the lamination type compound staple fiber with which it comes to join the biodegradability thermoplasticity polymer component of a high-melting point, and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] to a lamination type, and having potential crimp ability. Moreover, this invention makes a summary the nonwoven fabric characterized by for a core part consisting of a biodegradability thermoplasticity polymer component of a high-melting point, and for the sheath section consisting of a biodegradability thermoplasticity polymer component of the low melting point from the aforementioned polymer, and consisting of eccentric sheath-core type compound staple fibers which have 25 crimp numbers / crimp 25mm or more, and carrying out heat adhesion of the composition fiber partially. Moreover, this invention makes a summary the nonwoven fabric characterized by consisting of lamination type compound staple fibers which it comes to join the biodegradability thermoplasticity polymer component of a high-melting point, and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] to a lamination type, and have 25 crimp numbers / crimp 25mm or more, and carrying out heat adhesion of the composition fiber partially. Furthermore, this invention makes a summary the nonwoven fabric to which a core part is characterized by carrying out the confounding in [consist of eccentric sheath-core type compound staple fibers which consist of a biodegradability thermoplasticity polymer component of a high-melting point, consist of a biodegradability thermoplasticity polymer component of the low melting point / section / sheath / polymer / aforementioned], and have 25 crimp numbers / crimp 25mm or more, and / composition fiber / three dimensions. Furthermore, let the nonwoven fabric to which, as for this invention, the biodegradability thermoplasticity polymer component of a high-melting point and the biodegradability thermoplasticity polymer component of the low melting point [polymer / aforementioned] are characterized by carrying out the confounding in / consist of lamination type compound staple fibers which it comes to join to a lamination type and have 25 crimp numbers / crimp 25mm or more, and / composition fiber / three dimensions be a summary.